

## **Amendments to the Specification:**

**The substitute specification has the changes shown in the following marked-up version:**

### **DETAILED DESCRIPTION OF THE INVENTION**

Referring to Figure 1, a patient 10 has a tube 12 according to the present invention inserted in him. The tube 12 includes an outer lumen 14 and an inner lumen 16. The inner lumen 16 is a tube that is concentric with the lumen 14, provides structural support, and serves as an airway for the patient to breathe. Both an outside surface of the outer lumen 14, and an inside surface of the inner lumen 16 have both antibiofilm and antimicrobial surface coatings to reduce the buildup of bacteria and biofilm on the surfaces.

Tubes with inner and outer concentric lumens are known in the art, such as the tubes disclosed in the following patents, the full disclosures of which are all incorporated herein by this reference:

tube 400 in U.S. Patent No. 5,819,723

tube 400 in U.S. Patent No. 5,582,167

multiple lumen tracheal or endotracheal tube 32 in U.S. Patent No. 5,544,648

tube 42 and chamber 50 in U.S. Patent No. 5,389,074

tube member 4, lumen 6, and conduit members 45 in U.S. Patent No. 5,313,939

lumens 45 and 46 in U.S. Patent No. 5,143,062

"first, inner tube 48 and a larger diameter, outer tube 30" in U.S. Patent No. 4,446,864

outer and inner walls 3 and [[4]] in U.S. Patent No. 3,087,493

Referring to Figure 2, the outer lumen 14 includes a series of ports 18 for dispensing both antimicrobial and antibiofilm agents. Ports in endotracheal tubes are known in the art, such as the ports disclosed in the following patents, the full disclosures of which are all incorporated herein by this reference:

outlets ~~66, 102, and 154~~ (for infusing drugs and monitoring pressure) in U.S. Patent No. 5,544,648

perforations ~~52~~ (for delivering anesthetics) in U.S. Patent No. 5,389,074  
openings ~~43~~ (for delivering various medications, including steroids, antibiotics, irrigants, and lubricants) in U.S. Patent No. 5,313,939

suction eye ~~47~~ U.S. in U.S. Patent No. 5,143,062

"Tube ~~30~~ is provided with a plurality of radially extending openings ~~32~~ which permit the passage of gas into and out of the interior of portion ~~30~~" in U.S. Patent No. 4,446,864

ports ~~9~~ (for introducing beneficial fluids) in U.S. Patent No. 3,087,493

U.S. Patent No. 5,638,812 discloses a tracheal tube having a surface coating to reduce the buildup of bacteria on the tube. The disclosure of such tube with such coating is incorporated herein by this reference.

The outer lumen 14 also includes spots 20 for radiating ultrasound waves, and spots 22 for radiating electrical waves. The following disclosures of U.S. Patent No. 6,235,024 are incorporated herein by this reference:

ablation element ~~43~~, which includes a wall ~~47~~, which comprises an ultrasound transducer

RF ablation means ~~52~~

"A high frequency current generator means ~~30~~ is part of the ablation catheter system ~~4~~, wherein an electrical conducting means ~~29~~ is coupled from the generator ~~30~~ to the ablation element ~~43~~. The high frequency energy generator means ~~30~~ may comprise a switch means for switching high frequency energy to radiofrequency spectrum, ultrasound frequency spectrum, or radiofrequency/ultrasound frequency overlapped spectrum. This switch means is an operator-initiated action to the appropriate ablation mode selected from the group consisting of radiofrequency ablation mode, ultrasound ablation mode, and

simultaneous radiofrequency and ultrasound ablation mode. In each mode, the energy delivery may be continuous, pulsed, programmed, and the like."

The method of operating the ablation catheter, as described in the patent.

It is easily understood by those skilled in this technology that if treatment other than ablation is desired, the operator may simply use lower power settings of the current generator. Thus, the operator of the present invention may use the spots 20 and 22 to enhance the activity of the antimicrobial agents delivered through the ports 18, against the organisms embedded within the biofilm.

Referring to both Figure 2 and Figure 3, the tube 12 further includes a cuff 30. The cuff 30 is a standard cuff, known in the art, such as the cuffs disclosed in the following patents, the full disclosures of which are all incorporated herein by this reference:

cuff 450 in U.S. Patent No. 5,819,723  
cuff 406 in U.S. Patent No. 5,582,167  
cuffs 48 and 22 in U.S. Patent No. 5,499,625  
cuff 32 in U.S. Patent No. 5,389,074  
inflatable cuff 44 in U.S. Patent No. 5,143,062  
"occluding device 49" in U.S. Patent No. 4,446,864

It should be understood that the invention is not intended to be limited to the specifics of the described preferred embodiments, but is defined by the accompanying claims. That is, although illustrative embodiments have been shown and described, a wide range of modification, changes, and substitution is contemplated in the foregoing disclosure. In some instances, some features of the disclosed embodiments may be employed without a corresponding use of the other features. Accordingly, it is appropriate that the

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**PATENT**

Attorney Docket 604.002 (OTA 02-036)

appended claims be construed broadly and in a manner consistent with the scope of the invention.

**Please replace the specification with the following clean version:**

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tube member, lumen, and conduit members in U.S. Patent No. 5,313,939

lumens and in U.S. Patent No. 5,143,062

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outer and inner walls in U.S. Patent No. 3,087,493

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4,446,864

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